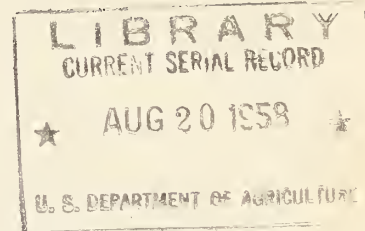


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CHANGING TECHNOLOGY IN EGG MARKETING



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CHANGING TECHNOLOGY IN EGG MARKETING ^{1/}

Increasing labor and equipment costs and the problem of maintaining reliable candling crews have forced egg marketing firms to search for more efficient methods of handling eggs. Until recently these firms have been somewhat slow to develop new methods. Now, however, electro-mechanical automation in handling, sizing, and cartoning eggs, and the spectro-photometric method of detecting blood spots in eggs are being tested and in some cases adopted by the egg industry.

New Equipment for Egg Handling and Inspection

Semiautomatic and automatic equipment for moving eggs to and from the candler, weighing, and cartoning have eliminated many manual operations and speeded the flow of eggs through some plants. In one system the candler inspects each egg for quality and places it in the proper grade rack. Electro-mechanical equipment then automatically sizes the eggs, shell-treats them when that is desired, places them in the proper cartons, closes the cartons, and delivers them to the packing tables where operators put them in shipping cases. Similar equipment delivers cartons and packing cases to the points in the plant where they are used at the time needed. The Agricultural Marketing Service conducted a cost study of one of these new systems which only recently had been installed in several plants on the Pacific coast. The study shows that savings have resulted from these recent innovations.

Although automatic equipment counts, sizes, and cartons eggs in some of the newer plants, hand candling continues. This operation limits efforts to speed the flow of eggs through the packing plant. The candler has to pick up each egg, twirl it before a light, ascertain the grade by observing certain exterior and interior factors, and place the egg in the proper grade rack. Although care in selecting candlers and training them to develop greater dexterity increases their output, candling remains a bottleneck. But introduction of electronic blood spot detectors and "flash candling" units promises to reduce the number of quality factors the candler inspects and, in some instances, may make hand candling unnecessary.

The flash candler is a device which lights the eggs from below as they move on a conveyer past an operator. The light enables the operator without individual handling of the eggs to detect and remove those with exterior defects such as cracks and dirty or misshapen shells and those having certain interior defects.

The electronic blood spot detector automatically removes eggs with blood spots from the conveyor line. It not only reduces the number of quality factors for which the candler inspects an egg, but checks conducted by the Agricultural Marketing Service in a plant in California indicate that it may be more accurate than visual candling. In this plant, some of the eggs handled were inspected for blood spots by candlers and others by electronic detectors. USDA egg graders found

^{1/} Prepared by O. C. Hester, Agricultural Economist, Market. Res. Div., Agr. Market. Serv.

that the electronic detector missed fewer blood spot eggs per 1,000 than did the candlers. Tests in this plant showed that when the blood spot detector was used in combination with hand candling, eggs were handled a little faster but the cost was slightly higher than without the detector.

The tests conducted by the AMS indicate that perhaps top quality eggs can be packed by a plant which substitutes electronic blood spot detectors and flash candling for hand candling, provided the plant receives eggs that have few quality defects other than blood spots. When laying flocks meet certain definable standards and proper production and handling practices are followed on the farm, on collection routes, and in the plant, defects can be greatly reduced. Blood spots are the principal cause of down grading when eggs are produced and handled under these conditions. A significant reduction in the cost of grading white eggs was obtained when electronic detectors and flash candlers were substituted for hand candling. A limitation of the electronic detector is that it can recognize blood spots in white eggs but not in brown eggs, as the pigment in brown shells is nearly the same color as blood.

Production and Marketing Implications

From these technological developments in egg handling and inspection, certain inferences may be drawn regarding their potential impact on producers, marketing practices, market organizations, and consumers. The trend toward large commercial egg producing units is likely to continue. The relatively large capital requirement for the installation on farms of adequate cooling and holding facilities necessary to maintain eggs at optimum temperature and humidity tends to limit production to larger units. Management requirements for these large units tend to make specialized egg production a single-enterprise farm operation rather than one of several on the farm.

To obtain the uniformly high quality needed when these automatic inspection devices are used, a plant often needs some measure of control over the production of eggs. This is one of several factors fostering integration in the production and marketing of eggs. A contract between producers or groups of producers and marketing firms on the west coast is one form of such integration. This arrangement assures dealers considerable control over volume supplied as well as quality. Another form of control is the production contracts developed by feed mills in the Midwest. Both the marketing and production contracts require that certain quality-maintaining practices be followed.

In order to use this automatic equipment efficiently, egg marketing firms must operate at a large volume. Competition to maintain sufficient volume may result in a reduction in the number of plants and economies in marketing. In the usual system, separate firms frequently perform the functions of collecting eggs from farms, grading and packing them, and distributing them to retailers and other buyers. To assure the needed quality control, a single firm would take over all these functions.

Changes in the structure of the market have brought adjustments in the price-making process. Direct selling by large plants to retailers and other buyers has reduced and probably will reduce further the volume of wholesale trading in bulk eggs. The price many egg buyers pay farmers is determined by subtracting a previously agreed upon discount from the wholesale market price. As the volume of wholesale trading declines, the wholesale price becomes less suitable for this use. In many markets the price to retailers now provides the basis for prices paid producers. Developments in this direction may be expected to continue.

Insofar as these technological changes bring about more efficient marketing, there will be gains to share among producers, consumers, and marketing firms. The relative bargaining strength of each group will affect the distribution of the gains.

